



RE: A Question on the UEC Permit

David Murry to: Philip Dellinger

09/07/2012 04:48 PM

Cc: Jose Torres, Lorrie Council, Ray Leissner, Stacey Dwyer,
Charles Maguire, Don Redmond

From: David Murry <david.murry@tceq.texas.gov>
To: Philip Dellinger/R6/USEPA/US@EPA
Cc: Jose Torres/R6/USEPA/US@EPA, Lorrie Council <lorrie.council@tceq.texas.gov>, Ray Leissner/R6/USEPA/US@EPA, Stacey Dwyer/R6/USEPA/US@EPA, Charles Maguire <charles.maguire@tceq.texas.gov>, Don Redmond <don.redmond@tceq.texas.gov>

Philip,

To extract the uranium from the mining fluids, these fluids are pumped through an ion exchange unit. This unit contains resins on which chloride ions are adsorbed. As the mining fluid comes in contact with the resin, the chloride ions go into solution and the uranium ions adsorb onto the resin. The resin is subsequently processed to recover the uranium, and the mining fluid is re-fortified with oxygen and bicarbonate and reused for additional mining. As the mining fluids are reused for additional mining, the process of ion exchange results in an increase in the chloride concentration of the mining fluid.

David

From: Philip Dellinger [mailto:Dellinger.Philip@epamail.epa.gov]
Sent: Friday, September 07, 2012 1:03 PM
To: David Murry
Cc: Jose Torres; Lorrie Council; Ray Leissner; Stacey Dwyer
Subject: RE: A Question on the UEC Permit

Thanks David. I'm not familiar with all the details of this process, but I thought they injected just carbonated water and/or oxygen. What is the source of chlorides, a chem reaction? Thanks.

From: David Murry <david.murry@tceq.texas.gov>
To: Jose Torres/R6/USEPA/US@EPA
Cc: Stacey Dwyer/R6/USEPA/US@EPA, Philip Dellinger/R6/USEPA/US@EPA, Ray Leissner/R6/USEPA/US@EPA, Lorrie Council <lorrie.council@tceq.texas.gov>, Charles Maguire <charles.maguire@tceq.texas.gov>
Date: 09/07/2012 11:57 AM
Subject: RE: A Question on the UEC Permit

Jose,

Good morning; hope you are doing well. Sorry for the delay, I was having some email problems this morning. They seem to be fixed now.

Class III permittees are required to establish upper control limits for the designated excursion parameters, which in this case are chlorides and conductivity. These parameters are used to determine if there is an excursion. A permittee is not required to establish UCLs for uranium and radium-226 (unless they are designated excursion parameters). Once an excursion has been verified, the permittee is required to analyze samples for uranium and radium-226 as a precaution.

Chlorides and conductivity are two parameters often used for excursion detection because they are conservative. That is to say, their concentration or activity in the groundwater is not affected by such processes as adsorption on clays or by chemical reduction. Therefore, chloride ions, for example, will move as fast as the groundwater velocity. If there is an excursion, these parameters are the first that will be seen. Uranium and radium, however, are affected by the presence of clay and chemical conditions of the groundwater. Because of this, they travel slower than the groundwater velocity.

If not adequately addressed, an excursion of mining fluids could migrate offsite. Monitoring for radium-226 and uranium during the remedial action for an excursion provides an indication of the effectiveness of the remedial action. Non-detection of these parameters or an absence of an upward trend in them during remedial action for an excursion is an indication that the remedial action is containing the excursion.

I see what you mean by not having an established UCL for uranium and radium-226, as they may be present in the groundwater naturally. However, again, monitoring for them is an added safeguard during remedial action to address an excursion.

David

From: Jose Torres [<mailto:Torres.Jose@epamail.epa.gov>]
Sent: Thursday, September 06, 2012 10:40 AM
To: David Murry
Cc: Stacey Dwyer; Philip Dellinger; Ray Leissner
Subject: A Question on the UEC Permit

Good morning Mr. Dave:

While attempting to learn about the allowed Upper Control Limits (UCLs) in the captioned, I came across provisions V.E.1 and V.E.2 as shown below. I could see that the UCLs for Chlorides and Conductivity are defined as the maximum determined values plus 25% in permit provision V.E.1.

However, provision V.E.2 in the subject permit does not appear to explicitly provide values for the UCLs for uranium and radium-226. I went to provision V.G.2, Excursions (see below), hoping to find UCL values for these constituents, but did not see any.

I would appreciate it if you could please clarify this point of the UCLs for uranium and radium-226 in this permit, since I seem to have somehow missed them. Your feedback will be greatly appreciated.

I look forward to hearing from you. Regards,

José Eduardo Torres - 6WQ-SG
Ground Water/UIC Section
EPA, Region 6
(214) 665-8092

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E. Monitoring Parameter Upper Limits

- 1. Chloride, conductivity, and total dissolved solids shall be used as monitoring parameters for excursions of mining solutions from each production area. The permittee shall establish upper limit concentrations that indicate the presence of an excursion shall be established for the production zone by adding 25% to the maximum values determined from the sampling of the production zone wells for each production area.**
- 2. In the event of an excursion, as defined in provision V.G.2. of the permit, TAC §331.2, monitoring for uranium and radium²²⁶ shall be required. The analysis for uranium and radium²²⁶ shall be in accordance with the methods specified in this permit.**

2. Excursions

- a. An excursion (defined by 30 TAC § 331.2 as the movement of mining solutions into a designated monitor well) is indicated by the sampling concentration of any control parameter provided in Section V.E.1. of this permit being equal to or above the upper limit established for the applicable PAA. Within two days of detecting an apparent excursion, the permittee shall repeat the sampling and complete a verifying analysis of the samples taken from each apparently affected well in accordance with 30 TAC § 331.105(3).
- b. If the verifying analysis confirms the existence of an excursion, the permittee shall notify the Field Operations Division, Region 14 – Corpus Christi Office, by the next working day by telephone and by letter postmarked within 48 hours of identification of the excursion. The notification shall identify the affected monitor well and the control parameter concentration.
- c. While mining solutions are present in a designated monitor well, the permittee shall conduct sampling and analysis of each affected well with a frequency of at least two times per week in accordance with 30 TAC § 331.105(4).
- d. Reporting shall be monthly according to 30 TAC § 331.85(f) (by the seventh day after each sample is taken). Parameters analyzed and reported during periods of excursions shall consist of the control parameters specified in Provision V.E.1 of this permit plus uranium and radium²²⁶ as specified in Provision V.E.2. of this permit.